

II. Remarks

Reconsideration and re-examination of this application in view of the above amendments and the following remarks is herein respectfully requested.

Claims 1, 5 and 7 are amended, claims 2-4, 8, and 10-16 are cancelled, and claims 17 and 18 are new. Accordingly, after entering this amendment, claims 1, 5-7, 9, 17 and 18 remain pending.

Drawing Objections Under 37 CFR 1.83(a)

The present claim amendments obviate the need to modify the drawings. More specifically, claim 10 has been cancelled and recitation of "a source of low pressure" has been removed from the claims. The claim amendments, in this regard, are fully supported by the specification, for example, in Figure 3 and at page 9, lines 1-8.

Claim Rejections - 35 U.S.C. § 102

Claims 1 and 6 were rejected under 35 U.S.C. § 102(b) as being anticipated by any one of U.S. Patent No. 5,174,338, issued to Yokota et al. (Yokota), U.S. Patent No. 5,894,860, issued to Baldauf et al. (Baldauf), U.S. Patent No. 4,491,153, issued to Bartholomaeus (Bartholomaeus), or Japanese Publication No. 63-208910.

The present invention, as defined by the now amended claims, is a solenoid operated valve assembly for use in an automatic transmission of an automobile. The valve assembly includes:

"a valve body having a control chamber, mutually spaced first, second and third ports communicating with the control chamber, the valve body further having a damping orifice connecting an end volume and a fluid reservoir" and

"a valve spool supported for movement along the control chamber, including a shank, a first land, adapted to open and close the first port and second port, and a second land located at an opposite end of the shank from the first land and adapted to open and close the third port, and wherein the second land has a larger diameter than a diameter of the first land".

Yokota discloses a pressure control valve unit having a valve housing formed with a valve bore. The valve housing is also formed with an inlet port, a drain port and a control port. A valve spool is disposed in the valve bore for selectively establishing fluid communication between the control port and the inlet port, and between the control port and the drain port. The drain port is connected to a first drain path which selectively establishes and blocks fluid communication between the drain port and a working fluid source and to a second drain path which normally connect the drain port to the working fluid source. A flow restricting orifice is provided in the second drain path for constantly permitting limited flow rate of the working fluid from the drain port and the working fluid source. However, Yokata does not disclose a damping orifice in combination with a valve spool having a first and second land wherein the second land is larger than the

first land, as claimed in claims 1 and 7. On the contrary, Yokata discloses first and second lands having the same diameter (see Figures 1 and 2, for example, of Yokata). Therefore, Yokata does not anticipate the present invention as now claimed. The rejection based thereon should be accordingly withdrawn.

Baldauf discloses a proportional pressure control solenoid valve having a valve spool with dual feedback pins slidable relative to the spool within a common bore of the spool as the spool moves. The feedback pins have unequal cross sectional areas defining an operative feedback area and enabling minimization of the valve's size in a cost efficient manner. However, Baldauf does not disclose a damping orifice in combination with a valve spool having a first and second land wherein the second land is larger than the first land, as claimed in claims 1 and 7. On the contrary, Baldauf discloses first and second lands having the same diameter (see Figure 1, for example, of Baldauf). Therefore, Baldauf does not anticipate the present invention as now claimed. The rejection based thereon should be accordingly withdrawn.

Bartholomaus discloses a pressure reducing valve having a valve housing. The valve housing having an axial bore coupled to a fluid operated load device, and first and second transversely extending control bores coupled to a supply tank and a fluid pressure source, respectively. A control slide is axially shiftable in the axial bore and has first and second pistons controlling fluid flow through the control bores. A electromagnet has a plunger which contacts and applies force to the opposite end of the control slide. A first restrictor provides fluid communication between the control slide

ends, while a second restrictor provides fluid communication between the control slide opposite end and the supply tank. However, Bartholomaus does not disclose a damping orifice in combination with a valve spool having a first and second land wherein the second land is larger than the first land, as claimed in claims 1 and 7. On the contrary, Bartholomaus discloses first and second lands having the same diameter (see Figures 1 and 2, for example, of Bartholomaus). Therefore, Bartholomaus does not anticipate the present invention as now claimed. The rejection based thereon should be accordingly withdrawn.

Japanese Publication No. 63-208910 (pub. '910) discloses a valve assembly. However, pub. '910 does not disclose a damping orifice in combination with a valve spool having a first and second land wherein the second land is larger than the first land, as claimed in claims 1 and 7. On the contrary, pub. '910 discloses first and second lands having the same diameter (see Figure 1, for example, of pub. '910). Therefore, pub. '910 does not anticipate the present invention, as now claimed. The rejection based thereon should be accordingly withdrawn.

Claims 1 and 6 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,357,480 issued to Oyama (Oyama). Oyama discloses a valve having a housing and a piston member. The piston member is housed in the housing so that it moves between first and positions. The housing includes a piston chamber for guiding the piston member between first and second positions while keeping a sealing engagement with the piston chamber. First and second chambers are positioned

adjacent to opposite ends of the piston member so that volumes of first and second chambers are changed depending upon a movement of the piston member. First and second ports are connected when the piston member takes the first position but disconnected when the piston member takes the second position. Third port is connected with the first and second chambers but disconnected from the first and second ports when the piston member takes the first position but connected with the second port when the piston member takes the second position. A partition is defined between the first and second chambers. Also, the partition has an orifice for connecting between the first chamber and the third port. However, Oyama does not disclose a damping orifice in combination with a valve spool having a first and second land wherein the second land is larger than the first land, as claimed in claims 1 and 7. On the contrary, Oyama discloses first and second lands having the same diameter (see Figures 1-4, for example, of Oyama). Therefore, Oyama does not anticipate the present invention as now claimed. The rejection based thereon should be accordingly withdrawn.

Claim 6 depends from claim 1 and therefore is patentable over Yokota, Baldauf, Bartholomaeus, Pub. '910 and Oyama taken separately or together for at least the same reasons as given above in support of claim 1. The rejection based thereon should be accordingly withdrawn.

Claim Rejections - 35 U.S.C. §103

Claims 5, 7, and 9-11 were rejected under 35 U.S.C. § 103(a) as being unpatentable over either U.S. Patent No. 6,386,220, issued to Koenings (Koenings) or U.S. Patent Application Publication No. 2002/0162593 to Arnold (Arnold) in view of Yokota et al. Applicants respectfully traverses this rejection.

Koenings discloses a solenoid operated pressure control valve. The solenoid has a reduced area portion of the flux collector in magnetic loop forming an annular air gap remote from the working air gap. The reduced flux across the annular air gap compensates for the rapid flux increase as the working air gap closes. However, Koenings does not disclose a damping orifice in combination with a valve spool having a first and second land wherein the second land is larger than the first land, as claimed in claims 1 and 7. On the contrary, Koenings does not have a damping orifice at all and there is no suggestion or motivation in Koenings to combine a damping orifice with first and second lands having the same diameter (see Figure 3, for example, of Koenings). In order for a claim to be rejected under 35 U.S.C. §103 a prima facie case of obvious must be shown. A prima facie case of obvious is not shown in the present case since there is no motivation or suggestion to combine the teachings of Koenings with Yokota. Therefore, Koenings and Yokota taken together or separately do not render the present invention as now claimed unpatentable. The rejection based thereon should be accordingly withdrawn.

Arnold discloses a solenoid operated pressure biased spool valve for controlling flow between a pressure inlet port and a valving chamber ported to a control signal port. The solenoid armature is connected to an operating rod biased for end-to-end contact with the spool. An adjustment screw is provided in a pole piece and is adjusted at calibration to limit armature and operating rod travel when the exhaust port is fully open at maximum coil current and the pressure bias on the spool tends to zero. However, Arnold does not disclose a damping orifice in combination with a valve spool having a first and second land wherein the second land is larger than the first land, as claimed in claims 1 and 7. On the contrary, Arnold does not have a damping orifice at all and there is no suggestion or motivation in Arnold to combine a damping orifice with first and second lands having the same diameter (see Figure 1, for example, of Arnold). In order for a claim to be rejected under 35 U.S.C. §103 a prima facie case of obvious must be shown. A prima facie case of obvious is not shown in the present case since there is no motivation or suggestion to combine the teachings of Arnold with Yokota. Therefore, Arnold and Yokota taken together or separately do not render the present invention as now claimed unpatentable. The rejection based thereon should be accordingly withdrawn.

Claims 5, 9, 17 and 18 depend from claims 1 or 7 and therefore are patentable over the applied references taken separately or together for at least the same reasons as given above in support of claims 1 and 7. The rejection based thereon should be accordingly withdrawn.

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Claim Rejections Under 35 U.S.C. 112, 2nd Paragraph


The inaccuracy with respect to the claim language of claims 1 and 5-6, kindly pointed out by the examiner, have been corrected. More specifically, the term "scaling orifice" has been replaced with "damping orifice" in the effected claims.

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Conclusion

In view of the *above* amendments and remarks, it is respectfully submitted that the present form of the claims are patentably distinguishable over the art of record and that this application is now in condition for allowance. Such action is respectfully requested.

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